

WHAT IS CLAIMED IS:

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1. A laser system comprising:  
a laser generating a laser beam with a first frequency;  
a non-linear optic disposed in an optical path of the beam, the non-linear optic effecting a conversion of the first frequency to a second frequency, the conversion varying with an angle of the non-linear optic relative to the optical path; and  
a first member having a first thermal coefficient of expansion, the first member thermally coupled to the non-linear optic so that thermal expansion in a dimension of the first member with a change in temperature of the non-linear optic effects a change in the angle of the non-linear optic.

2. The laser system of claim 1, wherein the thermal expansion of the member effects a predetermined change in the angle of the non-linear optic when the non-linear optic undergoes the change in temperature, and wherein the predetermined change in the angle effects a desired adjustment in the conversion.

3. The laser system of claim 2, wherein the conversion provided by the non-linear optic also varies with a temperature of the non-linear optic, and wherein the angle-induced adjustment in the conversion compensates for temperature-induced changes in the conversion by the non-linear optic.

4. The laser system of claim 3, wherein the non-linear optic is pivoted by the member within the optical path so that the second frequency remains within a desired range when a temperature of the non-linear optic varies throughout a predetermined temperature range during operation of the laser system.

5. The laser system of claim 1, further comprising a second member attached to the first member, the second member having a second coefficient of thermal expansion, the second expansion coefficient being different than the first expansion coefficient, wherein differential thermal expansion alters a bend angle of the attached first and second members, the angle of the non-linear optic being mechanically coupled to the bend angle.

6. The laser system of claim 1, further comprising a beam control system for selectively directing the beam onto a cornea of a patient so as to effect a desired refractive change, the laser system comprising a laser eye surgery system.

1                   7.       The laser system of claim 6, wherein the laser comprises a solid-  
2   state laser, and wherein a frequency of the beam incident on the cornea is in a range from  
3   about 180 to about 210 nm.

1                   8.       A laser eye surgery system comprising:  
2                   a laser generating a laser beam with a first frequency;  
3                   a non-linear optic disposed in an optical path of the beam so as to define  
4   an angle relative to the beam, the non-linear optic effecting a conversion of the first  
5   frequency to a second frequency, wherein the conversion has an angle-induced change in  
6   with a change in the angle, and wherein the conversion has a temperature-induced change  
7   with a change in a temperature of the non-linear optic;  
8                   a compensator including a first member having a thermal coefficient of  
9   expansion, the first member thermally coupled to the non-linear optic so that the change  
10   in temperature of the non-linear optic effects a change in a dimension of the first member,  
11   the first member mechanically coupled to the non-linear optic, the change in dimension of  
12   the first member effecting the change in angle of the non-linear optic so that the angle-  
13   induced change in the conversion compensates for the temperature-induced change in the  
14   conversion; and  
15                   a beam directing system in the optical path from the non-linear optic, the  
16   beam directing system selectively directing the beam toward portions of a cornea so as to  
17   effect a desired change in a refractive characteristic of the cornea.

1                   9.       A method comprising:  
2                   generating a laser beam at a first frequency with a laser;  
3                   converting the beam to a second frequency with a non-linear optic,  
4   wherein the converting step varies with a temperature of the non-linear optic and with an  
5   angle defined by the non-linear optic and the laser beam;  
6                   passively compensating for temperature-induced variations in the non-  
7   linear optic by transferring heat to a member from the non-linear optic so that thermal  
8   expansion of the member adjusts the angle of the non-linear optic.